APRIL/MAY 2025

23UEL31— SEMICONDUCTOR DEVICE AND IC FABRICATION TECHNOLOGY

Time : Three hours Maximum : 75 marks

SECTION A — (10 × 2 = 20 marks)

Answer ALL questions.

1. What does UJT stand for? Justify the name UJT.
2. State any two applications of SCR.
3. What is photodiode?
4. Write any two applications of LDR.
5. Tell merit and demerits of ICS.
6. Compare LSI with MSI.
7. Draw the circuit diagram of ideal operational amplifier.
8. Define bandwidth.
9. Draw the circuit diagram of integrator circuit.
10. What is sample and hold circuit?

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SECTION B — (5 × 5 = 25 marks)

Answer ALL questions.

11. (a) By drawing suitable diagrams, explain the construction details and working of a silicon controlled rectifier (SCR).

Or

(b) Explain the characteristics of TRIAC.

12. (a) Explain the construction, operation and characteristics of LED.

Or

(b) Draw the circuit diagram of semiconductor laser diode and explain its working.

13. (a) Discuss the monolithic integrated circuit technology.

Or

(b) Write a short note on the VLSI.

14. (a) Explain about the BJT differential amplifier.

Or

(b) Explain the internal circuit diagram of IC741.

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15. (a) Draw the circuit of adder and subtractor and explain its working.

Or

(b) Describe the construction of Sine waveform generator and explain its working.

SECTION C — (3 × 10 = 30 marks)

Answer any THREE questions.

16. Draw the basic structure, circuit symbol and equivalent circuit of UJT. Also explain the working of UJT.

17. Discuss the circuit diagram of solar cell and explain its working principle.

18. Explain the thin and thick film technology. Fabricate Resistors and capaciters using IC technology.

19. Write a short note on the following.

(a) Differential gain and

(b) Slew rate

(c) CMRR.

20. Describe the construction and working of square waveform generator.

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